SEQUENCE LISTING

5	(1) GENERAL INFORMATION: (i) APPLICANT: Robert G. Ulrich, Mark A. Olson Sina Bavari
10	(ii) TITLE OF INVENTION: Bacterial Superantigen Vaccines
	(iii) NUMBER OF SEQUENCES:16
15	(iv) CORRESPONDENCE ADDRESS: (A) ADDRESSEE: John Moran (B) STREET: US Army MRMC -504 Scott Street MCMR-JA (John Moran-Patent Atty)
20	(C) CITY: FORT DETRICK (D) STATE: MARYLAND (E) COUNTRY: USA (F) ZIP: 21702-5012
25	(v) COMPUTER READABLE FORM: (A) MEDIUM TYPE: Floppy disk (B) COMPUTER: Apple Macintosh (C) OPERATING SYSTEM: Macintosh 7.5 (D) SOFTWARE: Microsoft Word 6.0
30	(vi) CURRENT APPLICATION DATA: (A) APPLICATION NUMBER: (B) FILING DATE: (C) CLASSIFICATION:
35	(vii) PRIOR APPLICATION DATA: (A) APPLICATION NUMBER: (B) FILING DATE:
40	(viii) ATTORNEY/AGENT INFORMATION: (A) NAME: Moran, John (B) REGISTRATION NUMBER: 26,313 (C) REFERENCE/DOCKET NUMBER:
15	(ix) TELECOMMUNICATION INFORMATION (A) TELEPHONE: (301) 619-2065 (B) TELEFAX: (301) 619-7714
	SEQ ID NO:1: Staphylococcal enterotoxin A vaccine A489270P, periplasmic

59

Gene sequence:

	/
	1 ATGAAAAAA CAGCATTTAC ATTACTTTTA TTCATTGCCC TAACGTTGAC AACAAGTCCA
5	61 CTTGTAAATG GTAGCGAGAA AAGCGAAGAA ATAAATGAAA AAGATTTGCG
	121 GAATTGCAGG GAACAGCTTT AGGCAATCTT AAACAAATCT ATTATTACAA TGAAAAAGCT
10	181 AAAACTGAAA ATAAAGAGAG TCACGATCAA TTTCGACAGC ATACTATATT GTTTAAAGGC
15	241 TTTTTTACAG ATCATTCGTG GTATAACGAT TTATTAGTAC GTTTTGATTC AAAGGATATT
	301 GTTGATAAAT ATAAAGGGAA AAAAGTAGAC TTGTATGGTG CTTATGCTGG TTATCAATGT
20	361 GCGGGTGGTA CACCAAACAA AACAGCTTGT ATGTATGGTG GTGTAACGTT ACATGATAAT
	421 AATCGATTGA CCGAAGAGAA AAAAGTGCCG ATCAATTTAT GGCTAGACGG TAAACAAAAT
25	481 ACAGTACCTT TGGAAACGGT TAAAACGAAT AAGAAAAATG TAACTGTTCA GGAGTTGGAT
30	541 CTTCAAGCAA GACGTTATTT ACAGGAAAAA TATAATTTAT ATAACTCTGA TGTTTTTGAT
	601 GGGAAGGTTC AGAGGGGATT AATCGTGTTT CATACTTCTA CAGAACCTTC
35	661 GATTTATTTG GTGCTCAAGG ACAGTATTCA AATACACTAT TAAGAATATA TAGAGATAAT
	721 AAAACGATTA ACTCTGAAAA CATGCATATT GATATATAT TATATACAAG TTAAAÇATGG
40	781 TAGTTTTGAC CAACGTAATG TTCAGATTAT TATGAACCGA GAATAATCTA
45 /	SEQ ID NO: 2 Staphylococcal enterotoxin A vaccine A489270P, periplasmic Amino acid sequence
	1 MKKTAFTLLL FIALTLTTSP LVNGSEKSEE INEKDLRKKS ELQGTALGNL
50	51 KQIYYYNEKA KTENKESHDQ FRQHTILFKG FFTDHSWYND LLVRFDSKDI
~ /	101 VDKYKCKVID LYCAYACYOC ACCORDIVENAC MYCCVIDI UDALADI DERIVICI

	151 INLWLDGKQN TVPLETVKTN KKNVTVQELD LQARRYLQEK YNLYNSDVFD
	201 GKVQRGLIVF HTSTEPSVNY DLFGAQGQYS NTLLRIYRDN KTINSENMHI
5	251 DIYLYTS
10	SEQ ID NO: 3 Staphylococcal enterotoxin A vaccine A489270C, cytoplasmic Gene sequence: ATGAGAA AACCGAAGAA ATGAAAAAAAAAAAAAAAAAA
	74 ATGAGAA AAGCGAAGAA ATAAATGAAA AAGATTTGCG AAAAAAGTCT
15	121 GAATTGCAGG GAACAGCTTT AGGCAATCTT AAACAAATCT ATTATTACAA TGAAAAAGCT
	181 AAAACTGAAA ATAAAGAGAG TCACGATCAA TTTCGACAGC ATACTATATT GTTTAAAGGC
20	241 TTTTTTACAG ATCATTCGTG GTATAACGAT TTATTAGTAC GTTTTGATTC AAAGGATATT
25	301 GTTGATAAAT ATAAAGGGAA AAAAGTAGAC TTGTATGGTG CTTATGCTGG TTATCAATGT
	361 GCGGGTGGTA CACCAAACAA AACAGCTTGT ATGTATGGTG GTGTAACGTT ACATGATAAT
30	421 AATCGATTGA CCGAAGAGAA AAAAGTGCCG ATCAATTTAT GGCTAGACGG
	481 ACAGTACCTT TGGAAACGGT TAAAACGAAT AAGAAAAATG TAACTGTTCA GGAGTTGGAT
35	541 CTTCAAGCAA GACGTTATTT ACAGGAAAAA TATAATTTAT ATAACTCTGA TGTTTTGAT
40	601 GGGAAGGTTC AGAGGGGATT AATCGTGTTT CATACTTCTA CAGAACCTTC GGTTAATTAC
	661 GATTTATTTG GTGCTCAAGG ACAGTATTCA AATACACTAT TAAGAATATA TAGAGATAAT
45	721 AAAACGATTA ACTCTGAAAA CATGCATATT GATATATAT TATATACAAG TTAAACATGG
- 0	781 TAGTTTTGAC CAACGTAATG TTCAGATTAT TATGAACCGA GAATAATCTA SEQ ID NO:4
50	Staphylococcal enterotoxin A vaccine A489270C, cytoplasmic Amino acid sequence

	,
	1 MEKSEE INEKDLRKKS ELQGTALGNL KQIYYYNEKA KTENKESHDQ
	47 FRQHTILFKG FFTDHSWYND LLVRFDSKDI VDKYKGKKVD LYGAYAGYQC
5	97 AGGTPNKTAC MYGGVTLHDN NRLTEEKKVP INLWLDGKON TVPLETVKTN
	147 KKNVTVQELD LQARRYLQEK YNLYNSDVFD GKVQRGLIVF HTSTEPSVNY
10	197 DLFGAQGQYS NTLLRIYRDN KTINSENMHI DIYLYTS
10	
	SEQ ID NO: 5 Staphylococcal enterotoxin B vaccine B2360210
15	Gene sequence:
	1 GAACTAGGTA GAAAAATAAT TATGAGAAAA CACTATGTTG TTAAAGATGT
	51 TTTCGTATAT AAGTTTAGGT GATGTATAGT TACTTAATTT TAAAAGCATA
20	101 ACTTAATTAA TATAAATAAC ATGAGATTAT TAAATATAAT TAAGTTTCTT
	151 TTAATGTTTT TTTAATTGAA TATTTAAGAT TATAACATAT ATTTAAAGTG
25	201 TATCTAGATA CTTTTTGGGA ATGTTGGATA AAGGAGATAA AAAATGTATA
23	251 AGAGATTATT TATTTCACAT GTAATTTTGA TATTCGCACT GATATTAGTT
	301 ATTTCTACAC CCAACGTTTT AGCAGAGAT CAACCAGATC CTAAACCAGA
30	351 TGAGTTGCAC AAATCGAGTA AATTCACTGG TTTGATGGAA GATATGAAAG
	401 TTTTGTATGA TGATAATCAT GTATCAGCAA TAAACGTTAA ATCTATAGAT
35	451 CAATTTCTAT ACTTTGACTT AATATATTCT ATTAAGGACA CTAAGTTAGG
55	501 GGATTATGAT AATGTTCGAG TCGAATTTAA AAACAAAGAT TTAGCTGATA
	551 AATACAAAGA TAAATACGTA GATGTGTTTG GAGCTAATTA TTATTATCAA
40	601 TGTTATTTT CTAAAAAAC GAATGATATT AATTCGCATC AAACTGACAA
	. 651 ACGAAAACT TGTATGTATG GTGGTGTAAC TGAGCATAAT GGAAACCAAT
45	701 TAGATAAATA TAGAAGTATT ACTGTTCGGG TATTTGAAGA TGGTAAAAAT
-TJ	751 TTATTATCTT TTGACGTACA AACTAATAAG AAAAAGGTGA CTGCTCAAGA
	801 ATTAGATTAC CTAACTCGTC ACTATTTGGT GAAAAATAAA AAACTCTATG
50	851 AATTTAACAA CTCGCCTTAT GAAACGGGAT ATATTAAATT TATAGAAAAT
	901 GAGAATAGCT TTTGGTATGA CATGATGCCT GCACCAGGAG ATAAATTTCC

	951	CCAATCTAAA TATTTAATGA TGTACAATGA CAATAAAATG GTTGATTCTA
5	100	1 AAGATGTGAA GATTGAAGTT TATCTTACGA CAAAGAAAAA GTGAAATTAT
	105	1 ATTTTAGAAA AGTAAATATG AAGAGTTAGT AATTAAGGCA GGCACTTATA
	110	1 GAGTACCTGC CTTTTCTAAT ATTATTTAGT TATAGTTATT TTTGTTATAT
10	115	1 CTCTCTGATT TAGCATTAAC CCCTTGTTGC CATTATAGTT TTCACCAACT
	120	1 TTAGCTGAAA TTGGGGGATC ATTTTTATCT TTACTATGGA TAGTTACTGT
15	125	1 GTCGCCGTTT TTAACGATTT GATTCTCTTT TAATTTGTCA GTTAATTTTT
	1303	1 TCCATGCATC ATTTGCGTCA AACCTATTTC CATTTGGATT TATTCTTGAC
	135	1 AAATCAATTC TTTTAACACT ATCGGTATTA ATCGGCTTGT TATTAAAATT
20	1401	1 ACTAAGTTCA TCTAAATCAG CTGTACCCGT AATACTACTT TCGCCACCAT
	1451	1 TATTTAAATT GTACGTAACA CCAACTGTCT CATTTGCTGT TTTATCGATA
25	1501	ATATTTGCTT CTTTCAAAGC ATCTCTTACA TTTTTCCATA AGTCTCTATC
25	1551	L TGTTATTICA GAAGCCTTTG CAACGTTATT AATACCATTA TAATTTGAAG
	1601	L AAGAATGAAA ACCTGAACCT ACTGTTGTTA AAACTAAAGC ACTTGCTATC
30	1651	AATCTTCTTG TTAATAGTTT TTTATTCATT TTATTTTCTC CTATAACTTA
	1701	L TATGCAATCG AT
35		
33		/ID NO:6 hylococcal enterotoxin B vaccine, B2360210
		no acid sequence:
40		RLFISHVILIFALILVISTPNVLAESOPDPKPDELHKSSKF
	/	MEDMKVLYDDNHVSAINVKSIDOFLYFDLIYSIKDTKLGDYDNVRVEFKNKDLAD
45		OKYVDVFGANYYYQCYFSKKTNDINSHQTDKRKTCMYGGVTEHNGNQLDKYRSIT
	VRVF	EDGKNULSFDVQTNKKKVTAQELDYUTRHYLVKNKKLYEFNNSPYETGYIKFIE
	NEWS	FWYDMMPAPGDKFAQSKYLMMYNDNKMVDSKDVKIEVYLTTKKK
50/	/	ID NO: 7
7	Stap	hylococcal enterotoxin B vaccine, B899445P, periplasmic
	Gene	e sequence:

GAACTAGGTA GAAAAATAAT TATGAGAAAA CACTATGTTG TTAAAGATGT TTTCGTATAT AAGTTTAGGT GATGTATAGT TACTTAATTT TAAAAGCATA 5 ACTTAATTAA TATAAATAAC ATGAGATTAT TAAAATAAT TAAGTTTCTT 101 TTAATGTTTT TTTAATTGAA TATTTAAGAT TATAACATAT ATTTAAAGTG 151 10 TATCTAGATA CTTTTTGGGA ATGTTGGATA AAGGAGATAA AAAATGTATA 201 AGAGATTATT TATTTCACAT GTAATTTTGA/TATTCGCACT GATATTAGTT 251 301 ATTTCTACAC CCAACGTTTT AGCAGAGAT CAACCAGATC CTAAACCAGA 15 351 TGAGTTGCAC AAATCGAGTA AATTCAQTGG TTTGATGGAA AATATGAAAG TTTTGTATGA TGATAATCAT GTATQAGCAA TAAACGTTAA ATCTATAGAT 401 CAATTTCGAT ACTTTGACTT AATATATTCT ATTAAGGACA CTAAGTTAGG 20 451 GAATTATGAT AATGTTCGAG /TCGAATTTAA AAACAAAGAT TTAGCTGATA 501 AATACAAAGA TAAATACGYA GATGTGTTTG GAGCTAATGC TTATTATCAA 551 25 TGTGCTTTTT CTAAAAAAAC GAATGATATT AATTCGCATC AAACTGACAA 601 ACGAAAAACT TGTATGTATG GTGGTGTAAC TGAGCATAAT GGAAACCAAT 651 TAGATAAATA TAGAAGTATT ACTGTTCGGG TATTTGAAGA TGGTAAAAAT 30 701 751 TTATTATCTT TTGACGTACA AACTAATAAG AAAAAGGTGA CTGCTCAAGA ATTAGATAAC CTAACTCGTC ACTATTTGGT GAAAAATAAA AAACTCTATG 801 35 AATTTÁACAA CTCGCCTTAT GAAACGGGAT ATATTAAATT TATAGAAAAT 851 GAÇAATAGCT TTTGGTATGA CATGATGCCT GCACCAGGAG ATAAATTTGA 901 40 951 $m{\mathscr{C}}$ CAATCTAAA TATTTAATGA TGTACAATGA CAATAAAATG GTTGATTCTA AAGATGTGAA GATTGAAGTT TATCTTACGA CAAAGAAAAA GTGAAATTAT 100⁄1 ATTTTAGAAA AGTAAATATG AAGAGTTAGT AATTAAGGCA GGCACTTATA 1/051 45 GAGTACCTGC CTTTTCTAAT ATTATTTAGT TATAGTTATT TTTGTTATAT 1101 CTCTCTGATT TAGCATTAAC CCCTTGTTGC CATTATAGTT TTCACCAACT 1151 50 TTAGCTGAAA TTGGGGGATC ATTTTTATCT TTACTATGGA TAGTTACTGT 1201 GTCGCCGTTT TTAACGATTT GTTTCTCTTT TAATTTGTCA GTTAATTTTT

						1	
		1301	TCCATGCATC	ATTTGCGTCA	AACCTATTT	C CATTIGGATI	T TATTCTTGAC
~		1351	AAATCAATTC	TTTTAACACT	ATCGGTATT	'A ATCGGCTTGT	TATTAAAATT
5		1401	ACTAAGTTCA	ТСТАААТСАС	CTGTACCCG	T ATACTACTI	TCGCCACCAT
		1451	ТАТТТАААТТ	GTACGTAACA	CCAACTGTC	T/CATTTGCTG1	TTTATCGATA
10		1501	ATATTTGCTT	CTTTCAAAGC	ATCTCTTAC	A TTTTTCCATA	AGTCTCTATC
		1551	TGTTATTTCA	GAAGCCTTTG	CAACGTTAT	T AATACCATTA	TAATTTGAAG
15		1601	AAGAATGAAA	ACCTGAACCT	ACTGTTGTT	A AAACTAAAGC	CACTTGCTATC
13		1651	AATGTTCTTG	TTAATAGTTT	TTTATTCAT	T TTATTTTCTC	СТАТААСТТА
		1701	TTTGCAATCG	AT			
20		Stap	ID NO: 8 hylococcal er o acid sequer		B vaccine,	B899445P, p	eriplasmic
25			LFISHVILIFALI	. /	ESOPDPKPDE	40 LHKSSKF	
			ENMKVLYDDNHVS	'/ ,	٠, ١	ð) .	EEKWKDL'AD
30		KYKD	KYVDVFGANAYYC KYVDVFGANAYYC L?O EDGKNLLSFDVØ1	oafsketndi	NSHQTDKRKT	CMYGGVTEHNGN	QLDKYRSIT
35		NENS	FWYDMMPA PEDKE	FDQSKYLMMYN	DNKMYDSKDV:	KIEVYLTTKKK	:
			ID No:9 hylococcal en seguence:	nterotoxin	B vaccine,	B899445C, c	ytoplasmic
40		325			ATGAGT	CAACCAGATC	CTAAACCAGA
		351/	TGAGTTGCAC A	AATCGAGTA	AATTCACTGG	TTTGATGGAA .	AATATGAAAG
45		401	TTTTGTATGA T	GATAATCAT (GTATCAGCAA	TAAACGTTAA .	ATCTATAGAT
	/	451	CAATTTCGAT A	CTTTGACTT	AATATATTCT	ATTAAGGACA	CTAAGTTAGG
		501	GAATTATGAT A	ATGTTCGAG	TCGAATTTAA	AAACAAAGAT '	TTAGCTGATA
50		551	AATACAAAGA T	AAATACGTA (GATGTGTTTG	GAGCTAATGC '	TTATTATCAA
		601	TGTGCTTTTT C	TAAAAAAAC (GAATGATATT	AATTCGCATC	AAACTGACAA

	651 ACGAAAAACT TGTATGTATG GTGGTGTAAC TGAGCATAAT GGAAACCAAT	
5	701 TAGATAAATA TAGAAGTATT ACTGTTCGGG TATTTGAAGA TGGTAAAAAT	
	751 TTATTATCTT TTGACGTACA AACTAATAAG AAAAAGGTGA CTGCTCAAGA	
	801 ATTAGATTAC CTAACTCGTC ACTATTTGGT GAAAAATAAA AAACTCTATG	
10	851 AATTTAACAA CTCGCCTTAT GAAACGGGAT ATATTAAATT TATAGAAAAT	
	901 GAGAATAGCT TTTGGTATGA CATGATGCCT GCACCAGGAG ATAAATTTGA	
15	951 CCAATCTAAA TATTTAATGA TGTACAATGA CAATAAAATG GTTGATTCTA	
10	1001 AAGATGTGAA GATTGAAGTT TATCTTACGA CAAAGAAAAA GTGAAATTAT	,
	1051 ATTTTAGAAA AGTAAATATG AAGAGTTAGT AATTAAGGCA GGCACTTATA	
20	1101 GAGTACCTGC CTTTTCTAAT ATTATTTAGT TATAGTTATT TTTGTTATAT	
	1151 CTCTCTGATT TAGCATTAAC CCCTTGTTGC CATTATAGTT TTCACCAACT	
25	1201 TTAGCTGAAA TTOGGGGATC ATTTTTATCT TTACTATGGA TAGTTACTGT	1
25	1251 GTCGCCGTTT TTAACGATTT GTTTCTCTTT TAATTTGTCA GTTAATTTTT	
	1301 TCCATGCATC ATTTGCGTCA AACCTATTTC CATTTGGATT TATTCTTGAC	
30	1351 AAATCAATTC TTTTAACACT ATCGGTATTA ATCGGCTTGT TATTAAAATT	
	1401 ACTAACTTCA TCTAAATCAG CTGTACCCGT AATACTACTT TCGCCACCAT	
25	1451 TATTTAAATT GTACGTAACA CCAACTGTCT CATTTGCTGT TTTATCGATA	
35	1501 ATATTTGCTT CTTTCAAAGC ATCTCTTACA TTTTTCCATA AGTCTCTATC	
	1551 TGTTATTTCA GAAGCCTTTG CAACGTTATT AATACCATTA TAATTTGAAG	
40	1601 AAGAATGAAA ACCTGAACCT ACTGTTGTTA AAACTAAAGC ACTTGCTATC	
	1651 AATGTTCTTG TTAATAGTTT TTTATTCATT TTATTTTCTC CTATAACTTA	
	1701 TTTGCAATCG AT	
45	SEQ ID NO:10	
	Staphylococcal enterotoxin B vaccine, B899445C, cytoplasmic Amino acid sequence:	
50	MSQPDPKPDELHKSSKFTGIMENMKVLYDDNHVSAINVKSIDQFRYFDLIYSIKDTKL	
/	GNYDNVRVEFKNKDLADKYKDKYVDVFGANAYYQCAFSKKTNDINSHQTDKRKTCMYG	
	\u00f30	

	120
	GVTEHNGNQLDKYRSITVRVFEDGKNLLSFDVQTNKKKVTAQELDYLTRHYLVKNKKL
5	YEFNNSPYETGYIKFIENENSFWYDMMPAPGDKFDQSKYLMMYNDNKMVDSKDVKIEV YLTTKKK
10	SEQ ID NO: 11 Staphylococcal toxic shock syndrome toxin-1 vaccine TST30 Gene sequence:
	1 TAAGGAGAAT TAAAAAATGAA TAAAAAATTA CTAATGAATT TTTTTATCGT
15	51 AAGCCCTTTG TTGCTTGCGA CAACTGCTAC AGATTTTACC CCTGTTCCCT
	101 TATCATCTAA TCAAATAATC AAAAGTGCAA AAGCATCTAC AAACGATAAT
20	151 ATAAAGGATT TGCTAGACTG GTATAGTAGT GGGTCTGACA CTTTTACAAA
	201 TAGTGAAGTT TTAGATAATT COAGAGGATC TATGCGTATA AAAAACACAG
	251 ATGGCAGCAT CAGCTTGATA ATTTTTCCGA GTCCTTATTA TAGCCCTGCT
25	301 TTTACAAAAG GGGAAAAAGT TGACTTAAAC ACAAAAAAGAA CTAAAAAAAA
	351 CCAACATACT AGCGAAGGAA CTTATATCCA TTTCCAAATA AGTGGCGTTA
30	401 CAAATACTGA AAAATTACCT ACTCCAATAG AACTACCTTT AAAAGTTAAG
	451 GTTCATGGTA AAGATAGCCC CTTAAAGTAT GGGCCAAAGT TCGATAAAAA
	501 ACAATTAGCT ATATCAACTT TAGACTTTGA AATTCGTCAT CAGCTAACTC
35	551 AAATACATGO ATTATATCGT TCAAGCGATA AAACGGGTGG TTATTGGAAA
	601 ATAACAATGA ATGACGGATC CACATATCAA AGTGATTTAT CTAAAAAGTT
40	651 TGAATACAAT ACTGAAAAAC CACCTATAAA TATTGATGAA ATAAAAACTA
40	701 TAGAAGCAGA AATTAATTAA TTTACCACTT T
45	SEQ ID NO: 12 Staphylococcal toxic shock syndrome toxin-1 vaccine TST30 Amino acid sequence:
	MAKKLLMNFFIVSPLLLATTATDFTPVPLSSNQIIKTAKASTND
50	NIKDLLDWYSSGSDTFTNSEVLDNSRGSMRIKNTDGSISLIIFPSPYYSPAFTKGEKV
	DLNTKRTKKSQHTSEGTYIHFQISGVTNTEKLPTPIELPLKVKVHGKDSPLKYGPKFD

KKQLAISTLDFEIRHQLTQIHGLYRSSDKTGGYWKITMNDGSTYQSDLSKKFEYNTEK PPINIDEIKTIEAEIN..

5

SEQ ID NO: 13

Staphylococcus enterotoxin C1 vaccine SEC45 gene sequence

50

1 ATCATTAAAT ATAATTAATT TTCTTTTAAT ATTTTTTTAA TTGAATATTT 51 AAGATTATAA GATATATTA AAGTGTATCT AGATACTTTT TGGGAATGTT 101 GGATGAAGGA GATAAAAATG AATAAGAGTC GATTTATTTC ATGCGTAATT 151 TTGATATTCG CACTTATACT AGTTCTTTTT ACACCCAACG TATTAGCAGA 201 GAGCCAACCA GACCCTACGĆ CAGATGAGTT GCACAAAGCG AGTAAATTCA 251 CTGGTTTGAT GGAAAATATG AAAGTTTTAT ATGATGATCA TTATGTATCA 301 351 TAACATTAGT GATAAAAAC TGAAAAATTA TGACAAAGTG AAAACAGAGT 401 TATTAAATGA ÁGGTTTAGCA AAGAAGTACA AAGATGAAGT AGTTGATGTG TATGGATCAA ATTACTATGT AAACTGCTAT TTTTCATCCA AAGATAATGT 451 501 AGGTAAAGTT ACAGGTGGCA AAACTTGTAT GTATGGAGGA ATAACAAAAC ATGAÁGGAAA CCACTTTGAT AATGGGAACT TACAAAATGT ACTTATAAGA 551 601 GTATATGAAA ATAAAAGAAA CACAATTTCT TTTGAAGTGC AAACTGATAA 651 ÉAAAAGTGTA ACAGCTCAAG AACTAGACAT AAAAGCTAGG AATTTTTTAA TTAATAAAA AAATTTGTAT GAGTTTAACA GTTCACCATA TGAAACAGGA 701 751 801 GCCTGCACCA GGCGATAAGT TTGACCAATC TAAATATTTA ATGATGTACA 851 ACGACAATAA AACGGTTGAT TCTAAAAGTG TGAAGATAGA AGTCCACCTT 901 ACAACAAGA ATGGATAATG TTAATCCGAT TTTGATATAA AAAGTGAAAG 951 TATTAGATAT ATTTGAAAGG TAAGTACTTC GGTGCTTGCC TTTTTAGGAT 1001 GCATATATAT AGATTAAACC GCACTTCTAT ATTAATAGAA AGTGCGGTTA

1051 TTTATACACT CAATCTAAAC TATAATAATT GGAATCATCT TCAAA SEQ ID NO: 14 Staphylococcus enterotoxin C1 vaccine SEC45 5 Amino acid sequence: MNKSRFISCVILIFALILVLFTPNVLAESQPDPTPDEL#HKASKF TGLMENMKVLYDDHYVSATKVKSVDKFRAHDLIYNI\$DKKLKNYDKVKTELLNEGLAK 10 KYKDEVVDVYGSNYYVNCYFSSKDNVGKVTGGKTCMYGGITKHEGNHFDNGNLQNVLI RVYENKRNTISFEVQTDKKSVTAQELDIKARNFLINKKNLYEFNSSPYETGYIKFIEN 15 NGNTFWYDMMPAPGDKFDQSKYLMMYNDNKTVDSKSVKIEVHLTTKNG" SEQ ID NO:15 Streptococcal pyrogenic exotoxin A vaccine SPEA42 20 . Gene sequence: TCATGTTTGA CAGCTTATCA TCGATAAGCT TACTTTTCGA ATCAGGTCTA TCCTTGAAAC AGGTGCAACA TAGATTAGGG CATGGAGATT TACCAGACAA 25 CTATGAACGT ATAMACTCAC ATCACGCAAT CGGCAATTGA TGACATTGGA 101 ACTAAATTCA ATCAATTTGT TACTAACAAG CAACTAGATT GACAACTAAT 151 30 201 TCTCAACAAA CGTTAATTTA ACAACATTCA AGTAACTCCC ACCAGCTCCA 251 TCAATGCTTA CCGTAAGTAA TCATAACTTA CTAAAACCTT GTTACATCAA GGTTTT/TTCT TTTTGTCTTG TTCATGAGTT ACCATAACTT TCTATATTAT 301 35 TGACÁACTAA ATTGACAACT CTTCAATTAT TTTTCTGTCT ACTCAAAGTT 351 TT¢TTCATTT GATATAGTCT AATTCCACCA TCACTTCTTC CACTCTCTCT 401 40 ACCGTCACAA CTTCATCATC TCTCACTTTT TCGTGTGGTA ACACATAATC 451 501 AAATATCTTT CCGTTTTTAC GCACTATCGC TACTGTGTCA CCTAAAATAT 552 ACCCCTTATC AATCGCTTCT TTAAACTCAT CTATATATAA CATATTTCAT 45 CCTCCTACCT ATCTATTCGT AAAAAGATAA AAATAACTAT TGTTTTTTTT Ø01 651 GTTATTTTAT AATAAAATTA TTAATATAAG TTAATGTTTT TTAAAAATAT 50 ACAATTTTAT TCTATTTATA GTTAGCTATT TTTTCATTGT TAGTAATATT 701 751 GGTGAATTGT AATAACCTTT TTAAATCTAG AGGAGAACCC AGATATAAAA

	801 TGGAGGAATA TTAATGGAAA ACAATAAAAA AGTATTGAAG AAAATGGTAT
5	851 TTTTTGTTTT AGTGACATTT CTTGGACTAA CAATCTCGCA AGAGGTATTT
	901 GCTCAACAAG ACCCCGATCC AAGCCAACTT CACAGATCTA GTTTAGTTAA
	951 AAACCTTCAA AATATATT TTCTTTATGA GGGTGACCCT GTTACTCACG
10	1001 AGAATGTGAA ATCTGTTGAT CAACTTAGAT CTCACGATTT AATATATAAT
	1051 GTTTCAGGGC CAAATTATGA TAAATTAAAA ACTGAACTTA AGAACCAAGA
15	1101 GATGGCAACT TTATTTAAGG ATAAAAACGT TGATATTTAT GGTGTAGAAT
13	1151 ATTACCATCT CTGTTATTTA TGTGAAAATG CAGAAAGGAG TGCATGTATC
	1201 TACGGAGGGG TAACAAATCA TGAAGGGAAT CATTTAGAAA TTCCTAAAAA
20	1251 GATAGTCGTT AAAGTATCAA TCGATGGTAT CCAAAGCCTA TCATTTGATA
	1301 TTGAAACAAA TAAAAAAAATG GTAACTGCTC AAGAATTAGA CTATAAAGTT
25	1351 AGAAAATATC TTACAGATAA TAAGCAACTA TATACTAATG GACCTTCTAA
	1401 ATATGAAACT GGATATAAA AGTTCATACC TAAGAATAAA GAAAGTTTTT
	1451 GGTTTGATTT TTTCCCTGAA CCAGAATTTA CTCAATCTAA ATATCTTATG
30	1501 ATATATAAAG ATAATGAAAC GCTTGACTCA AACACAAGCC AAATTGAAGT
	1551 CTACCTAACA ACCAAGTAAC TTTTTGCTTT TGGCAACCTT ACCTACTGCT
35	1601 GGATTTAGAA ATTTTATTGC AATTCTTTTA TTAATGTAAA AACCGCTCAT
30	1651 TTGATCAGCG GTTTTGTCTT ATCTAAAGGA GCTTTACCTC CTAATGCTGC
	1701 AAAATTTTAA ATGTTGGATT TTTGTATTTG TCTATTGTAT TTGATGGGTA
40	1751 ATCCCATTTT TCGACAGACA TCGTCGTGCC ACCTCTAACA CCAAAATCAT
	1801 AGACAGGAGC TTGTAGCTTA GCAACTATTT TATCGTC
45	SEC ID NO:16 Streptococcal pyrogenic exotoxin A vaccine SPEA42
	Amino acid sequence:
	MENNKKVLKKMVFFVLVTFLGLTISQEVFAQQDPDPSQLHRSSL
50	VKNLQNIYFLYEGDPVTHENVKSVDQLRSHDLIYNVSGPNYDKLKTELKNQEMATLFK

DKNVDIYGVEYYHLCYLCENAERSACIYGGVTNHEGNHLEIPKKIVVKVSIDGIQSLS

FDIETNKKMVTAQELDYKVRKYLTDNKQLYTNGPSKYETGYIKFIPKNKESFWFDFFP EPEFTQSKYLMIYKDNETLDSNTSQIEVYLTTK